

## Non-Toxic, Non-flammable, Low FP Heat Exchanger Fluids, Phase I

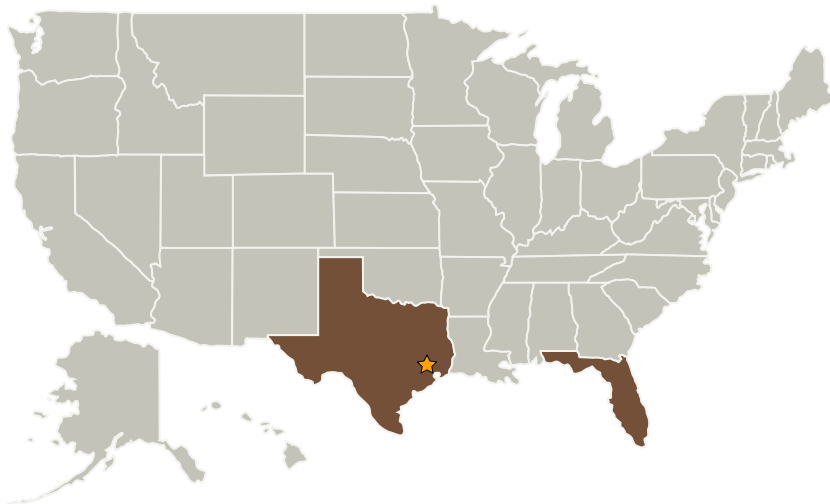
Completed Technology Project (2005 - 2005)



## Project Introduction

This proposed research addresses NASA 2004-1 SBIR Topic B3.01, "Environmental Control of Spacecraft Cabin Atmosphere." The objective of this proposed effort is to demonstrate the freeze/thaw properties and fault tolerance of a water pump loop using an environmentally-friendly, non-toxic, drop-in replacement heat exchange fluid. These fluid formulations are comprised of novel, non-flammable, non-explosive, non-toxic, non-corrosive compounds which will not expand upon freezing and therefore diminish the chances that a heat exchanger will rupture. The fluid formulations also have a much lower freezing point than water which can broaden the temperature operating range of the heat exchanger. The objective of using a drop-in replacement is also very cost effective since little to no change in hardware would be required. This proposal specifically addresses the following need cited in the solicitation description under subheading Environmental Control and Thermal Systems: "Alternative heat transfer fluids that are non-toxic, non-flammable, and have a low freezing temperature."

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Johnson Space Center (JSC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Mainstream Engineering Corporation	Supporting Organization	Industry	Rockledge, Florida

## Primary U.S. Work Locations

Florida	Texas
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## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Dwight Back

## Technology Areas

**Primary:**

- TX14 Thermal Management Systems
  - └ TX14.2 Thermal Control Components and Systems
    - └ TX14.2.3 Heat Rejection and Storage